REMARKS/ARGUMENTS

Upon entry of the instant amendment, claims 1-15 are pending. Claims 1, 7 and 11 are currently amended to more particularly define the Applicant's invention.

The Applicant would like to point out a discrepancy in the status of claims 5, 9 and 15. In particular, paragraph 7 of the Office Action Summary indicates that claims 5, 9 and 15 are "objected to". However, paragraph 2 of the Detailed Action as well as the first full paragraph on page 4 of the Detailed Action indicate that claims 5, 9 and 15 are being rejected under 35 U.S.C. § 103. For the purposes of this response, the Applicant assumes that claims 5, 9 and 15 are rejected and that the status listed on the Office Action Summary is in error.

Claim Rejections – 35 U.S.C. § 103(a):

Claims 1-15 have been rejected under Hutchinson U.S. Patent No. 5,751,830 in view of Startup U.S. Patent No. 6,137,612. It is respectfully submitted that neither of these patents, either singly or in combination, disclose or suggest an invention for channelizing optical signals as recited in the claims at issue.

Indeed, the invention relates to dividing up relatively wide bandwidth optical signals into a plurality of subchannels in order to improve the resolution of the optical channelizer. As set forth in the Background of the Invention, known optical channelizers, for example at 1 GHz with a 40 MHz IF, are only able to detect signals within IF filter pass band, about 960 MHz out of every 1 GHz of bandwidth or 96% of all possible signals. The present invention solves this problem and provides signal channelization at frequencies on the order of 100 GHz or more into channels having a bandwidth as small as a few MHz. In order to improve the resolution, the optical channelizer in accordance with the present invention is formed from a plurality of subchannelizers, for example 25, which can provide 1 GHz channel spacing and 40 MHz signal resolution; a drastic improvement over known optical signal channelizers. As is known in the art, known optical channelizers are various local oscillator signals are optically heterodyned with

an optical signal which is spatially separate, for example, by way of a Bragg cell. In order to improve the resolution of the optical channelizer, the present invention recites replicating the optical signals and separating the optical signals into a plurality of subchannels before directing those signals into the optical channelizer. In one embodiment of the invention, as recited in claims 1-6, the optical signal is replicated into a plurality of sub-signals, separated from each other by a predetermined frequency. In this embodiment, the local oscillator signals are spatially divided into a plurality of signals. The spatially separated local oscillator signals as well as the replicated optical signals are applied to an optical channelizer which provides optical heterodyning of the signal at smaller bandwidth to provide increased resolution of the system.

The embodiment recited in claims 7-10 is similar except in this embodiment the local oscillator signals are replicated and separated by a predetermined frequency. In this embodiment, an optical splitter is used for spatially separating the optical signal to enable the spatially separated optical signals to be optically heterodyne with the frequency separated LO signals to achieve essentially the same result.

Claims 11-15 recite a hybrid optical channelizer which is a hybrid of the embodiment recited in claims 1-6 and 7-10.

The references of record do not disclose or suggest the improved optical channelizer for providing increased resolution as the system recited in the claims at issue. The Hutchinson patent in fact relates to a camera or an imaging device. It absolutely has nothing to do with optical channelizing and specifically improving the resolution of such optical channelizers. In particular, the Hutchinson patent relates to a camera for imaging infrared radiation. In this system, the camera images infrared radiation by optically heterodyning various infrared signals with a local oscillator signal at a single frequency. In particular, the Examiner's attention is directed to equation (6) in col. 6 of the Hutchinson patent. The term Δ and ω is defined in lines 44 and 45 as a difference frequency between the received signal and the local oscillator. Thus, it

should be clear that for the infrared imaging system or camera recited in the Hutchinson system infrared radiation is optically heterodyne with a local oscillator signal at a single frequency; totally unlike the system recited in the claims at issue.

The channelizer disclosed in the Startup patent relates to a totally different method of channelizing radiation signals which do not even include the need for a comb of local oscillator frequencies. In particular, the Startup patent discloses a relatively complicated system in which a radio frequency source is modulated onto a piezoelectric modulator in a number of different frequency channels. These modulated optical signals are applied to a quadrature replicator signal, and, in turn, to a pair of Bragg cells, which are, in turn, under the control of a chirp pulse generator and amplitude generator. It is clear that the Startup patent similarly does not disclose an optical channelizer, as recited in the claims at issue, which utilizes a comb of local oscillator frequencies which are optically heterodyned with optical signals replicated optical signals that are separated by a predetermined frequency. As such, it is respectfully submitted that neither the Hutchinson or Startup patent neither singly or in combination disclose or suggest an optical channelizer as recited in the claims at issue. For all of the above reasons the Examiner is respectfully requested to reconsider and withdraw this rejection.

Respectfully submitted,

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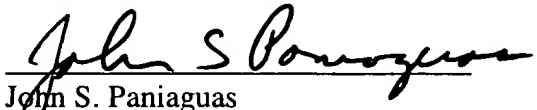
By: 

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